THE ANNALS OF APPLIED BIOLOGY

EDITED BY
W. B. BRIERLEY
AND
C. T. GIMINGHAM

VOLUME 31

CAMBRIDGE
AT THE UNIVERSITY PRESS
1944

CAMBRIDGE UNIVERSITY PRESS
LONDON: BENTLEY HOUSE

CHICAGO: THE UNIVERSITY OF CHICAGO PRESS
(Agents for the United States)
BOMBAY, CALCUTTA, MADRAS: MACMILLAN

All rights reserved

PRINTED IN GREAT BRITAIN

CONTENTS

No. 1 (March 1944)

PAGE

1. Pollution of the rivers of West Wales by lead and zinc mine effluent. By Lily Newton. (With 1 Text-figure) 1

2. Physiological cotton wilt in the Sudan Gezira. By A. S. Boughey, B.Sc., Ph.D. (With Plate 1 and 5 Text-figures) 12

3. The nutrition of the pea. By R. M. Woodman 19

4. The nutrition of vegetables in sand. By R. M. Woodman. (With 21 Text-figures) . . 22

5. Notes on basal rot of narcissus. III. Eradication of the disease from narcissus stocks by repeated use of formalin in the hot-water bath. By Lilian E. Hawker. (With Plate 2) . . 31

6. The relationships of some viruses causing necrotic diseases of the potato. By F. C. Bawden and F. M. L. Sheffield. (With Plate 3) 33

7. The 'phloem necrosis' virus disease of tea in Ceylon. I. Introductory account, symptoms, and transmission by grafting. By T. E. T. Bond. (With Plates 4 and 5) 40

8. An unusual correlation between insect damage and crop harvested. By C. H. Gadd, D.Sc. (Birm.) 47

9. Studies of wireworm populations. I. A census of wireworms in pasture. By George Salt, Sc.D., and F. S. J. Hollick, Ph.D. (With 7 Text-figures) 52

10. The use of toxic polynitro derivatives in pest control. II. The estimation of dinitro-*o*-cresol in winter washes. By R. F. Batt, H. Martin and R. L. Wain 64

11. The application of the probit method to toxicity test data adjusted for mortality in the controls. By D. J. Finney, M.A. 68

12. Proceedings of the Association of Applied Biologists: 1 October 1943. Symposium on control of insects attacking stored foodstuffs: The organization and work of the Pest Infestation Laboratory of the Department of Scientific and Industrial Research. By G. V. B. Herford. Factors influencing the course of an insect infestation in bulk wheat. By T. A. Oxley and R. W. Howe. (With 2 Text-figures). Behaviour of Tyroglyphid mite populations in stored grain and flour. By M. E. Solomon. The role of the chemist in research on fumigation. By W. Burns Brown. Control of the granary weevil with finely ground mineral dusts. By E. A. Parkin . . . 75

No. 2 (May 1944)

1. The characteristics of certain varieties of potato with special reference to their suitability for drying. By W. G. Burton 89

2. Influence of certain soil factors on chocolate spot of beans. By H. H. Glasscock, W. M. Ware and N. H. Pizer 97

3. Occurrence of *Ophiobolus graminis* var. *Avenae* on wheat crops in the field. By R. W. G. Dennis 100

4. Mould deterioration of feeding-stuffs in relation to humidity of storage. Part I. The growth of moulds at low humidities. By D. Snow, M. H. G. Crichton and N. C. Wright. (With Plate 6 and 6 Text-figures) 102

PAGE

5. Mould deterioration of feeding-stuffs in relation to humidity of storage. Part II. The water uptake of feeding-stuffs at different humidities. By D. Snow, M. H. G. Crichton and N. C. Wright. (With 5 Text-figures) 111

6. Serological studies on sugar-beet yellows virus. By A. Kleczkowski and M. A. Watson . 116

7. Stability of the microbial populations of the caecum of guinea-pigs and rabbits. By Frank Baker 121

8. Chafer damage to grassland in north Wales in 1942–1943 by *Phyllopertha horticola* L. and *Hoplia philanthus* Fuess. I. Notes on population, life history and morphology. By I. Thomas and Gwen M. Heal. (With 12 Text-figures) 124

9. The biology of *Tribolium destructor* Uytt. I. Some effects of fertilization and food factors on fecundity and fertility. By J. M. Reynolds, B.Sc., A.R.C.S., Ph.D. (With 12 Text-figures and 1 Diagram) 132

10. Inert dust insecticides. Part I. Mechanism of action. By P. Alexander, J. A. Kitchener and H. V. A. Briscoe. (With 2 Text-figures) 143

11. Inert dust insecticides. Part II. The nature of effective dusts. By P. Alexander, J. A. Kitchener and H. V. A. Briscoe 150

12. Inert dust insecticides. Part III. The effects of dusts on stored products pests other than *Calandria granaria*. By P. Alexander, J. A. Kitchener and H. V. A. Briscoe. (With 1 Text-figure) 156

13. Proceedings of the Association of Applied Biologists: 3 December 1943. Discussion on slugs: I. Introduction. Seasonal activity of slugs. By H. F. Barnes, M.A., Ph.D. (With 3 Text-figures.) II. Field sampling for slugs. By D. C. Thomas, B.Sc., A.R.C.S. Citrus research in Southern Rhodesia. By W. J. Hall, D.Sc. History and recent work of the Jodrell Laboratory, Kew. By C. R. Metcalfe, M.A., Ph.D. 160

Obituary notices: Sir Edwin John Butler, C.M.G., C.I.E., F.R.S.; Sir Edward B. Poulton, M.A., D.Sc., LL.D., F.R.S.; Lt.-Col. Sir David Prain, C.M.G., C.I.E., V.M.H., M.A., M.B., LL.D., F.R.S. 168

Report of the Council of the Association of Applied Biologists for the year 1943 . . . 170

Report of the Honorary Treasurer for the year ended 31 December 1943 171

Accounts 172

No. 3 (August 1944)

1. Studies in the physiology of the onion plant. II. Inflorescence initiation and development, and other changes in the internal morphology of onion sets, as influenced by temperature and day length. By O. V. S. Heath and P. B. Mathur. (With Plate 7) 173

2. Soil conditions and the take-all disease of wheat. VIII. Further experiments on the survival of *Ophiobolus graminis* in infected wheat stubble. By S. D. Garrett 186

3. Factors influencing infection of the tomato by *Verticillium albo-atrum*. II. By F. M. Roberts, Ph.D. 191

4. Factors influencing the development of cotton diseases. By Lee Ling. (With 6 Text-figures) 194

5. Diseases of the gladiolus. I. Control of hard rot, due to *Septoria gladioli* Passer., by fungicidal treatment of the corms. By Lilian E. Hawker. (With 1 Text-figure) 204

PAGE

6. Diseases of the gladiolus. II. Experiments on dry rot disease caused by *Sclerotinia gladioli* Drayt. By L. E. Hawker, R. J. Bray and T. W. Burrows. (With Plate 8) 211

7. The short wet method of seed disinfection. By A. E. Muskett. (With Plate 9) . . 218

8. A comparison of the toxicity of certain dyestuffs to the conidia of *Fusarium culmorum*. By W. M. Dion and K. A. Lord 221

9. Studies of fluctuations in insect populations. XI. The interrelationship of the wheat blossom midges and their host plant. By H. F. Barnes and J. W. Weil. (With 2 Text-figures) . 231

10. Observations on the biology and physiology of wireworms of the genus *Agriotes* Esch. By A. C. Evans. (With 10 Text-figures) 235

11. A further note on an unusual correlation between insect damage and crop harvested. By C. H. Gadd, D.Sc. (With 1 Text-figure) 250

12. Trichloracetonitrile as a fumigant. By H. H. S. Bovingdon, Ph.D., D.I.C. and F. P. Coyne, B.Sc., Ph.D. 255

13. Reviews 260

No. 4 (November 1944)

1. Investigation into the production of bacteriostatic substances by fungi. VI. Examination of the larger Basidiomycetes. By W. H. Wilkins and G. C. M. Harris 261

2. Observations on the method of transmission of internal boll disease of cotton by the cotton-stainer bug. By Helen L. Frazer. (With Plate 10, 5 Text-figures and 2 Graphs) . . . 271

3. Dry rot of potato [*Fusarium caeruleum* (Lib.) Sacc.]. Investigation on the sources and time of infection. By T. Small, Ph.D., A.R.C.S. 290

4. The prevention of seed-borne diseases of flax by seed disinfection. II. Comparison of the dusting, short wet and fixation methods of treatment. By A. E. Muskett and J. Colhoun . 295

5. The 'phloem necrosis' virus disease of tea in Ceylon. II. Field observations and effect on yield. By T. E. T. Bond. (With 4 Text-figures) 300

6. The transmission of the virus of the 'woodiness' disease of passion fruit (*Passiflora edulis*) by single leaf grafts. By R. M. Nattrass. (With Plate 11) 310

7. A two years' survey of the potato aphides in the Northern Agricultural Advisory Province. By F. H. Jacob, M.Sc. (With 1 Text-figure) 312

8. Beet eelworm (*Heterodera schachtii* Schm.) in East Anglia, 1934–1943. By F. R. Petherbridge, Dip. Agric. (Cantab.) and F. G. W. Jones, M.A. (With 2 Text-figures) . . . 320

9. Influence of earthworms on larval emergence in the potato-root eelworm, *Heterodera rostochiensis* Wollenweber. By C. Ellenby, B.Sc., Ph.D. (With 4 Text-figures) . . . 332

10. The behaviour of mercury compounds in soil. By J. R. Booer, Ph.D., B.Sc. (With 9 Text-figures) 340

11. Proceedings of the Association of Applied Biologists: Cereal diseases in England and Wales. By W. C. Moore. Biologic specialization in the cereal rusts. By F. T. Brooks. Looking back and looking forward. (A retrospect of cereal diseases in East Anglia in the past 21 years.) By W. A. R. Dillon Weston. Cereal diseases in Scotland. By R. W. G. Dennis. Cereal diseases in Mid-Wales. By D. Walters Davies. The take-all disease of cereals. By S. D. Garrett. Eyespot, *Cercosporella herpotrichoides* Fron, and lodging of wheat. By M. D. Glynne . . 360

12. List of members of the Association of Applied Biologists 379

Digitized by the Internet Archive
in 2025

https://archive.org/details/annals-of-applied-biology_1944_31_indexcontents

INDEX OF AUTHORS

PAGE

ALEXANDER, P., KITCHENER, J. A. and BRISCOE, H. V. A. Inert dust insecticides. Part I. Mechanism of action. (With 2 Text-figures) . 143
—— —— —— Inert dust insecticides. Part II. The nature of effective dusts 150
—— —— —— Inert dust insecticides. Part III. The effects of dusts on stored products pests other than *Calandra granaria*. (With 1 Text-figure) 156

BAKER, FRANK. Stability of the microbial populations of the caecum of guinea-pigs and rabbits . 121
BARNES, H. F. Seasonal activity of slugs. (With 3 Text-figures) 160
BARNES, H. F. and WEIL, J. W. Studies of fluctuations in insect populations. XI. The interrelationship of the wheat blossom midges and their host plant. (With 2 Text-figures) . . 231
BATT, R. F., MARTIN, H. and WAIN, R. L. The use of toxic polynitro derivatives in pest control. II. The estimation of dinitro-*o*-cresol in winter washes 64
BAWDEN, F. C. and SHEFFIELD, F. M. L. The relationships of some viruses causing necrotic diseases of the potato. (With Plate 3) . . 33
BOND, T. E. T. The 'phloem necrosis' virus disease of tea in Ceylon. I. Introductory account, symptoms, and transmission by grafting. (With Plates 4 and 5) 40
—— The 'phloem necrosis' virus disease of tea in Ceylon. II. Field observations and effect on yield. (With 4 Text-figures) 300
BOOER, J. R. The behaviour of mercury compounds in soil. (With 9 Text-figures) . . 340
BOUGHEY, A. S. Physiological cotton wilt in the Sudan Gezira. (With Plate 1 and 5 Text-figures) 12
BOVINGDON, H. H. S. and COYNE, F. P. Trichloracetonitrile as a fumigant 255
BRAY, R. J. *See* Hawker, L. E. *et al.* . . . 211
BRIERLEY, W. B. *Obit.* Lt.-Col. Sir David Prain . 169
BRISCOE, H. V. A. *See* Alexander, P. *et al.* . . 143
—— *See* Alexander, P. *et al.* 150
—— *See* Alexander, P. *et al.* 156
BROOKS, F. T. Biologic specialization in the cereal rusts 362
BURNS BROWN, W. The role of the chemist in research on fumigation 81
BURROWS, T. W. *See* Hawker, L. E. *et al.* . . 211
BURTON, W. G. The characteristics of certain varieties of potato with special reference to their suitability for drying 89

COLHOUN, J. *See* Muskett, A. E. . . . 295
COYNE, F. P. *See* Bovingdon, H. H. S. . . 255
CRICHTON, M. H. G. *See* Snow, D. *et al.* . . 102
—— *See* Snow, D. *et al.* 111

DENNIS, R. W. G. Occurrence of *Ophiobolus graminis* var. *Avenae* on wheat crops in the field 100
—— Cereal diseases in Scotland . . . 370

PAGE

DILLON WESTON, W. A. R. Looking back and looking forward. (A retrospect of cereal diseases in East Anglia in the past 21 years) . . . 366
DION, W. M. and LORD, K. A. A comparison of the toxicity of certain dyestuffs to the conidia of *Fusarium culmorum* 221

ELLENBY, C. Influence of earthworms on larval emergence in the potato-root eelworm, *Heterodera rostochiensis* Wollenweber. (With 4 Text-figures) 332
EVANS, A. C. Observations on the biology and physiology of wireworms of the genus *Agriotes* Esch. (With 10 Text-figures) 235

FINNEY, D. J. The application of the probit method to toxicity test data adjusted for mortality in the controls 68
FRAZER, HELEN L. Observations on the method of transmission of internal boll disease of cotton by the cotton-stainer bug. (With Plate 10, 5 Text-figures and 2 Graphs) 271

GADD, C. H. An unusual correlation between insect damage and crop harvested . . . 47
—— A further note on an unusual correlation between insect damage and crop harvested. (With 1 Text-figure) 250
GARRETT, S. D. Soil conditions and the take-all disease of wheat. VIII. Further experiments on the survival of *Ophiobolus graminis* in infected wheat stubble 186
—— The take-all disease of cereals . . . 376
GLASSCOCK, H. H., WARE, W. M. and PIZER, N. H. Influence of certain soil factors on chocolate spot of beans 97
GLYNNE, M. D. Eyespot, *Cercosporella herpotrichoides* Fron, and lodging of wheat . . . 377

HALL, W. J. Citrus research in Southern Rhodesia 164
HARRIS, G. C. M. *See* Wilkins, W. H. . . 261
HAWKER, LILIAN E. Notes on basal rot of narcissus. III. Eradication of the disease from narcissus stocks by repeated use of formalin in the hot-water bath. (With Plate 2) . . . 31
—— Diseases of the gladiolus. I. Control of hard rot, due to *Septoria gladioli* Passer., by fungicidal treatment of the corms. (With 1 Text-figure) . 204
HAWKER, L. E., BRAY, R. J. and BURROWS, T. W. Diseases of the gladiolus. II. Experiments on dry rot disease caused by *Sclerotinia gladioli* Drayt. (With Plate 8) 211
HEAL, GWEN M. *See* Thomas, I. . . . 124
HEATH, O. V. S. and MATHUR, P. B. Studies in the physiology of the onion plant. II. Inflorescence initiation and development, and other changes in the internal morphology of onion sets, as influenced by temperature and day length. (With Plate 7) 173

PAGE

HERFORD, G. V. B. The organization and work of the Pest Infestation Laboratory of the Department of Scientific and Industrial Research . 75
HOLLICK, F. S. J. *See* Salt, George . . . 52
HOWE, R. W. *See* Oxley, T. A. 76

IMMS, A. D. *Obit.* Sir Edward P. Poulton . . 168

JACOB, F. H. A two years' survey of the potato aphides in the Northern Agricultural Advisory Province. (With 1 Text-figure) . . . 312
JONES, F. G. W. *See* Petherbridge, F. R. . . 320

KITCHENER, J. A. *See* Alexander, P. *et al.* . . 143
—— *See* Alexander, P. *et al.* 150
—— *See* Alexander, P. *et al.* 156
KLECZKOWSKI, A. and WATSON, M. A. Serological studies on sugar-beet yellows virus . . . 116

LING, LEE. Factors influencing the development of cotton diseases. (With 6 Text-figures) . . 194
LORD, K. *See* Dion, W. M. 221

MARTIN, H. *See* Batt, R. F. *et al.* . . . 64
MATHUR, P. B. *See* Heath, O. V. S. . . . 173
METCALFE, C. R. History and recent work of the Jodrell Laboratory, Kew 166
MOORE, W. C. Cereal diseases in England and Wales 360
MUSKETT, A. E. The short wet method of seed disinfection. (With Plate 9) 218
MUSKETT, A. E. and COLHOUN, J. The prevention of seed-borne diseases of flax by seed disinfection. II. Comparison of the dusting, short wet and fixation methods of treatment . . . 295

NATTRASS, R. M. The transmission of the virus of the 'woodiness' disease of passion fruit (*Passiflora edulis*) by single leaf grafts. (With Plate 11) 310
NEWTON, LILY. Pollution of the rivers of West Wales by lead and zinc mine effluent. (With 1 Text-figure) 1

OXLEY, T. A. and HOWE, R. W. Factors influencing the course of an insect infestation in bulk wheat. (With 2 Text-figures) . . . 76

PARKIN, E. A. Control of the granary weevil with finely ground mineral dusts 84
PETHERBRIDGE, F. R. and JONES, F. G. W. Beet eelworm (*Heterodera schachtii* Schm.) in East Anglia, 1934–1943. (With 2 Text-figures) . 320
PIZER, N. H. *See* Glasscock, H. H. *et al.* . . 97

REYNOLDS, J. M. The biology of *Tribolium destructor* Uytt. I. Some effects of fertilization and food factors on fecundity and fertility. (With 12 Text-figures and 1 Diagram) 132
ROBERTS, F. M. Factors influencing infection of the tomato by *Verticillium albo-atrum.* II . . 191

SALT, GEORGE and HOLLICK, F. S. J. Studies of wireworm populations. I. A census of wireworms in pasture. (With 7 Text-figures) . . 52
SHEFFIELD, F. M. L. *See* Bawden, F. C. . . 33
SMALL, T. Dry rot of potato [*Fusarium caeruleum* (Lib.) Sacc.]. Investigation on the sources and time of infection 290
SNOW, D., CRICHTON, M. H. G. and WRIGHT, N. C. Mould deterioration of feeding-stuffs in relation to humidity of storage. Part I. The growth of moulds at low humidities. (With Plate 6 and 6 Text-figures) 102
—— —— —— Mould deterioration of feeding-stuffs in relation to humidity of storage. Part II. The water uptake of feeding-stuffs at different humidities. (With 5 Text-figures) . . . 111
SOLOMON, M. E. Behaviour of Tyroglyphid mite populations in stored grain and flour . . 81

THOMAS, D. C. Field sampling for slugs . . 163
THOMAS, I. and HEAL, GWEN M. Chafer damage to grassland in North Wales in 1942–1943 by *Phyllopertha horticola* L. and *Hoplia philanthus* Fuess. I. Notes on population, life history and morphology. (With 12 Text-figures) . . 124

WAIN, R. L. *See* Batt, R. F. *et al.* . . . 64
WALTERS DAVIES, D. Cereal diseases in Mid-Wales 374
WARE, W. M. *See* Glasscock, H. H. *et al.* . . 97
WATSON, M. A. *See* Kleczkowski, A. . . . 116
WEIL, J. W. *See* Barnes, H. F. 231
WILKINS, W. H. and HARRIS, G. C. M. Investigation into the production of bacteriostatic substances by fungi. VI. Examination of the larger Basidiomycetes 261
WILTSHIRE, S. P. *Obit.* Sir Edwin John Butler . 168
WOODMAN, R. M. The nutrition of the pea . . 19
—— The nutrition of vegetables in sand. (With 21 Text-figures) 22
WRIGHT, N. C. *See* Snow, D. *et al.* . . . 102
—— *See* Snow, D. *et al.* 111